

# *Postings: from the desk of Jim Brodrick*

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Last week, DOE published a new report, ["Energy Savings Estimates of Light-Emitting Diodes in Niche Lighting Applications."](#) A follow-up to a similar report published in 2008, it takes a close look at twelve different markets, and provides two kinds of estimates for each one: the energy saved last year due to actual levels of SSL market penetration, and the potential energy savings if those markets switched completely to SSL. (Although some people understand the term "niche" as referring to market segments that are small or specialized, that's not the intention in this report, where it merely refers to the various market segments or lighting applications – some of them bigger than others – that comprise the lighting market as a whole.)

The twelve markets don't include every application where LEDs are making progress in the marketplace, but were chosen to reflect emerging trends, potential for growth, and stakeholder interest. They include four general-illumination markets – PAR, BR, and R replacement lamps; MR16 replacement lamps; 2-foot by 2-foot troffer fixtures; and general service A-type replacement lamps – along with four outdoor markets: roadway, parking, area and flood, and residential. In addition, DOE analyzed four other applications for high-brightness LEDs in consumer electronic displays: televisions, laptops, monitors, and mobile handsets.

The topic of this report is fundamental to the development of solid-state lighting. Why? Because in order to successfully chart the course of SSL's development, it's essential that the entire industry have a clear idea not only of how much the technology can save us

in the future, but how much it's saving us *right now*. A quick look at the report will show what I mean. Let's take all twelve markets together. Last year, the use of LED products in these applications saved a total of about 3.9 terawatt-hours of energy, which is equivalent to the electricity needed to power more than a quarter-million typical U.S. households for a year. That's especially encouraging because solid-state lighting has only just begun to penetrate the marketplace, so even with minimal market penetration it's already saving energy – which means that the potential savings are far higher.

And, in fact, the report estimates that if all twelve markets switched to LEDs overnight, the annual energy savings would be around 263 terawatt-hours – equivalent to taking more than 21 million households completely off the grid. Not bad, but that figure is based on 2010 performance levels – and we know from experience that the overall performance of SSL is steadily climbing. If the estimate were based on the performance improvements predicted for 2020 in [the DOE SSL 2010 Multi-Year Program Plan](#), the annual savings from solid-state lighting in those twelve applications would jump to 399 terawatt-hours – the annual energy required to power nearly 32 million households!

Outdoor applications are one of the key areas where SSL has shown that it can already compete with incumbent technology. For the outdoor markets analyzed, the new report calculates that LED products saved a total of 2.2 terawatt-hours of electricity in 2010, and estimates the annual savings (based on current performance levels) at 131 terawatt-hours if all lighting within this sector were replaced with LEDs. The widespread interest in SSL for outdoor applications – as evidenced by the popularity of DOE's [Municipal Solid-State Street Lighting Consortium](#), which was launched last year and already has more than 450 participants – will no doubt increase the immediate savings from LED products sharply in the next few years.

The bottom line is that having a handle on the current and potential energy savings from SSL is necessary, in order to guide planning. Not just DOE's planning, but the planning of the industry as a whole – from manufacturers, to utilities, to energy-efficiency organizations. That's why so many of them look to these reports, and why you find their statistics cited so often in presentations given throughout the industry.

And one thing this latest report tells us is that even at this early stage, solid-state lighting is saving energy – and that those savings will only get bigger as the technology and market penetration improve.

As always, if you have questions or comments, you can reach me at [postings@lightingfacts.com](mailto:postings@lightingfacts.com).

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